Title: CONTROLLING THREADING DISLOCATION DENSITIES IN Ge ON SI USING GRADED GESI LAYERS AND PLANARIZATION Inventor: Eugene A. Fitzgerald Serial No. Not Yet Assigned Atty Docket No. ASC-023C2 Atty: Mark L. Beloborodov Express Mail Mailing Label No.: EL 988704770 US

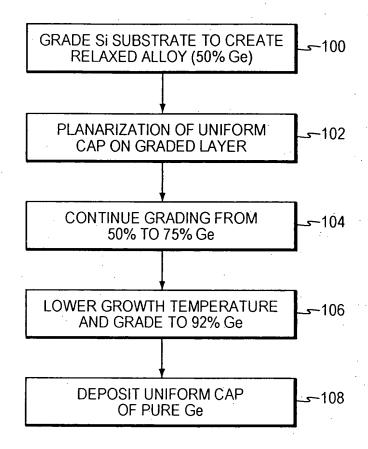


FIG. 1

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	SAMPLE A	SAMPLE B	SAMPLE C	SAMPLE D
FINAL Ge COMPOSITION	100%	100%	50%	100%
GRADING RATE (% Ge μm ⁻¹)	5	10	10	10
TOTAL EPITAXIAL THICKNESS (μm)	23	12	6.5	12
GROWTH TEMPERATURE (°C)	750	800	750	50-76% : 750 76-100% : 550
GROWTH PRESSURE (mT)	25	50	25	50-76% : 25 76-100% : 3
CMPAT 50%	NO	NO	<u>-</u>	YES
THREADING DISLOCATION DENSITY (cm ⁻²)	1±0,1x10 ⁷	1-5x10 ⁷	6.3±0.1x10 ⁶	2.1±0.2x10 ⁶
CRACK DENSITY (cm ⁻¹)	47±5	0	0	0
PARTICLE DENSITY (cm ⁻²)	1250±100	600±40	50±5	150±10
RMS ROUGHNESS (nm)	35.9	47	37.3	24.2
a⊥OF TOP LAYER (Å)	5.6559	5.6558	5.5327	5.6597
a II OF TOP LAYER (Å)	5.6559	5.6552	5.5352	5.6409

GROWTH PARAMETERS AND CHARACTERIZATION RESULTS OF SAMPLES A-D

FIG. 2

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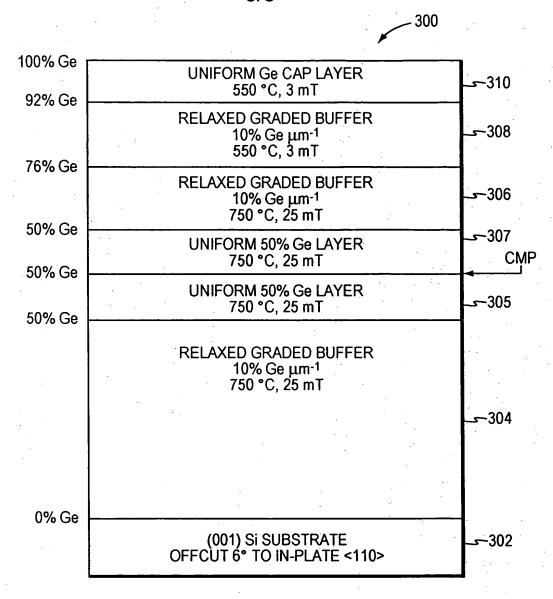


FIG. 3

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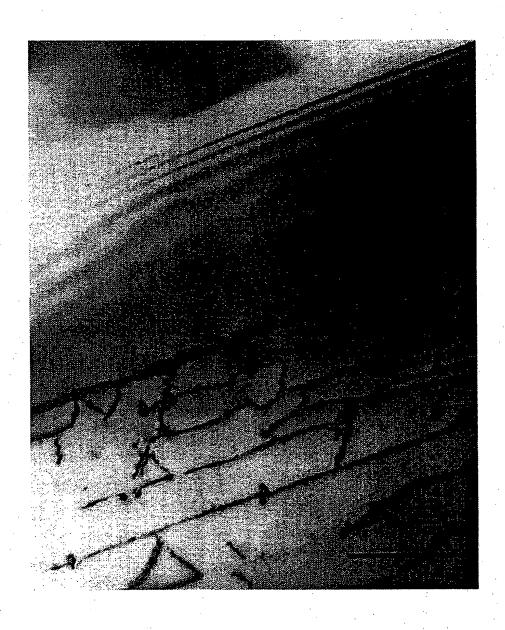


FIG. 4

Title: CONTROLLING THREADING DISLOCATION DENSITIES IN Ge ON Si USING GRADED GeSi LAYERS AND PLANARIZATION Inventor: Eugene A. Fitzgerald Serial No. Not Yet Assigned Atty Docket No. ASC-023C2 Atty: Mark L. Beloborodov Express Mail Mailing Label No.: EL 988704770 US

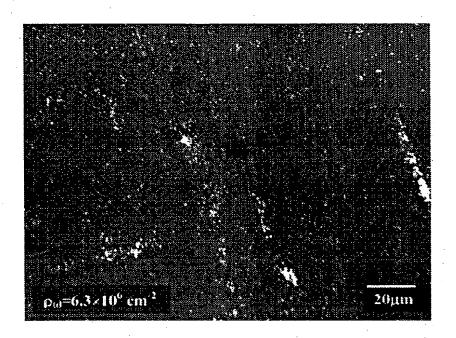


FIG. 5A

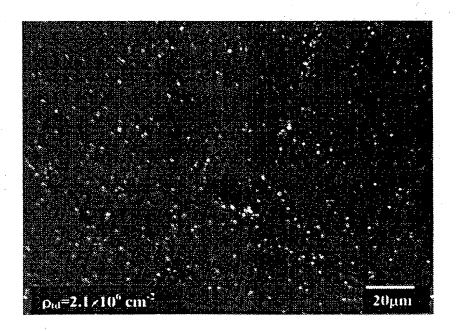


FIG. 5B